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ABSTRACT

The Portable Presentation Package is a prototype of an audiovisual equipment package designed to facilitate technical training in remote areas, situations in which written communications are difficult, or in situations requiring rapid presentation of instructional material. The major criteria employed in developing the package were (1) that the equipment be easily portable by one person, (2) that it utilize items available through established commercial channels, and (3) that components be assembled as modules to allow replacement or substitutions as units without interference with other components. The package contained the essential equipment required in preparing and giving audiovisual presentations to small groups. It was slightly larger than an attache case, weighed 2[illegible] pounds, included camera with light meter, projector with remote controls and extra lenses, a projector screen, tape recorder, cords and mirrors, and additional film and magnetic tape. Descriptions, illustrations, and an example for use are presented. (KB)

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A PORTABLE PRESENTATION PACKAGE FOR AUDIO-VISUAL INSTRUCTION

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AIR FORCE SYSTEMS COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

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FOREWORD

This report represents a portion of the applied research program of the Technical Training Branch, Training Research Division, Behavioral Sciences Laboratory. The project was conducted under Project 1710, "Training, Personnel, and Psychological Stress Aspects of Bioastronautics," Task 171007, "Automated Training and Programmed Instruction." Dr. Gordon A. Eckstrand was the Project Scientist. Dr. Ross L. Morgan was the Task Scientist. The Portable Presentation Package was developed in-house. Dr. Edgar A. Smith, Technical Training Branch, was the Psychologist and Mr. Ralph E. Roberts, Research Instrumentation Branch, the Instrumentation Technician. The fabrication was accomplished by Mr. William E. Brady of the Fabrication and Modification Division of ASD Deputy for Flight Test. The authors express appreciation to Dr. Gordon A. Eckstrand, Dr. Ross L. Morgan, Dr. Theodore E. Cotterman, Dr. Donald B. Haines, and Mr. Milton E. Wood for their assistance and advice in this undertaking.

ABSTRACT

The Portable Presentation Package is a prototype of a self-contained package of audio and visual equipment designed to facilitate technical training particularly in (a) remote areas, (b) situations in which written communications are difficult, and (c) situations requiring rapid on-the-spot preparation of instructional material. The package contains the essential components required in preparing and giving visual and audio-visual presentations to small groups. The major criteria employed in developing the package were that (a) the equipment be easily portable by one man, (b) it utilize off-the-shelf items presently available through established commercial channels, and (c) components be assembled as modules to allow replacement or substitution as units without interference with other components. The Portable Presentation Package is only slightly larger than an attaché case, weighs 23 pounds, includes camera with light meter, projector with remote controls and supplementary lenses, projection screen, tape recorder and the necessary power cords and mirrors, and additional film and magnetic tapes. Descriptions and drawings are presented in the report.

PUBLICATION REVIEW

This technical documentary report has been reviewed and is approved.

Walter F. Grether

WALTER F. GRETHER
Technical Director
Behavioral Sciences Laboratory

AMRL-TDR-63-91

A PORTABLE PRESENTATION PACKAGE FOR AUDIO-VISUAL INSTRUCTION

by

Edgar A. Smith
Ralph E. Roberts
William E. Brady

INTRODUCTION

The Portable Presentation Package was developed to fulfill two related needs: for aids to support training in remote areas and for instructional techniques relatively independent of written language.

There is a need for instructional techniques uniquely suitable for use in remote locations and under conditions other than the traditional academic classroom. Such situations include not only training of military personnel at remote sites, but also support of counterinsurgency operations, the training programs of the Peace Corps, and much on-the-job training within industry. These applications often call for training of small groups either due to degree of specialization or the wide dispersal of persons requiring the training.

Furthermore, there is a growing need for instructional methodologies relatively independent of written language. Such methodologies may be required for any of a variety of factors. In certain maintenance tasks, freeing the trainee from written manuals may free his hands and visual attention, allowing him to concentrate more precisely on the performance of the required tasks. In many forms of cross-cultural training, dependence on written language presents specific difficulties that often may be overcome in part by using pictures and the spoken word. Also, rapid advances and the concomitant need for rapid revision of material is becoming an increasingly difficult problem. In certain situations sets of pictures and audio tapes appear to provide some advantages over printed manuals in this respect.

The Portable Presentation Package is the result of an attempt to obtain and integrate a series of components into a package that would be portable and flexible, yet inexpensive, and which could be obtained with a minimum expenditure of time and money for developing new devices. The resultant package is only slightly larger than an attaché case, weighs 23 pounds, includes camera with light meter, projector with remote controls and supplementary lenses, projection screen, tape recorder, the necessary power cords and mirrors, and additional film and magnetic tapes. If the user has a means of having film developed, this package contains the minimal equipment needed to make and to give visual and

audio-visual presentations to small groups of people. While it would take a competent instructor to fully exploit the equipment, the equipment does not require extensive pretraining in graphic arts or photography.

CRITERIA FOR SELECTING COMPONENTS

Several criteria were applied in selecting the components for the prototype. However, no large-scale survey of available equipment was undertaken nor were all possible alternative devices obtained and tested. We think that the devices described below meet the specified criteria but their inclusion in no way indicates that they are superior to other available equipment. In most instances there was more than one possible device that could have been included.

Criteria for Inclusion

1. All of the components should be available through local retailers for ease of duplication and replacement. This provides a ready source for information and assistance in the appropriate use and care of the equipment. More specifically, this criterion requires that the device be available without waiting for further developments, technological modifications, or overcoming minor production technicalities. None of the devices requires funds for research and development.

2. All components should be light and compact. The package as a whole is designed so that it can be carried by one person in much the same way that an attaché case is carried.

3. All electrical components should operate either from standard wall outlets (110-volt, 60-cycle, AC) or from conventional batteries. This requirement was intended to facilitate use in remote sites and in locations other than training centers. While it would have been possible to assemble a package utilizing all battery-powered devices or one utilizing only 110-volt AC devices, we felt that other criteria could be more suitably met by including some battery-powered and some nonbattery-powered devices.

4. All components should be separate units. Any one device can be used independently. Further, components are integrated in such a way that additional devices may be incorporated with a minimum of difficulty. For example, while the package does not contain a motion picture projector or a slide projector, either can easily be added, taking full advantage of the screen and other components included. When adding components, the focal length of the lens system must be taken into account. Often supplementary lenses are required but these are usually obtainable without difficulty.

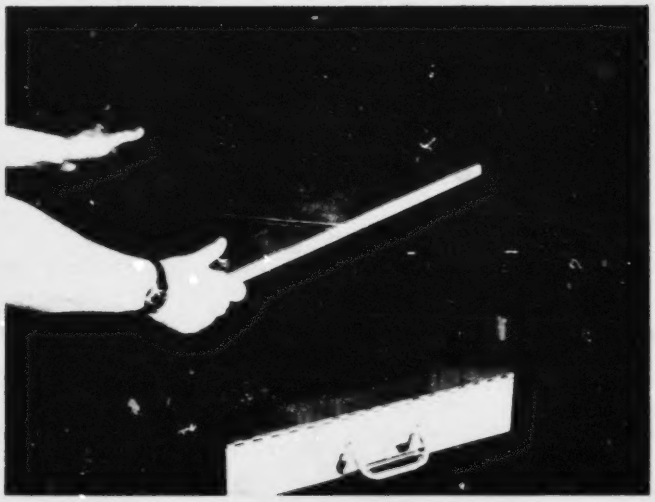
5. All devices should be replaceable as units. This provides not only for ease of maintenance but also for substitution when indicated. As an example, the tape

recorder included might not be suitable for certain applications, but it can be replaced as a unit by other recorders as required in the particular situation.

6. All components should be moderately priced. The goal was to keep the cost of the entire package at $200, exclusive of the fabricated housing, mirror, and screen unit. Especially in terms of the tape recorder, this criterion restricted the range of devices suitable for inclusion. A number of recorders were admirable from all other respects but their price prohibited their inclusion. This warrants particular attention since in many situations increasing the cost may be desirable to obtain a recorder better suited for particular applications.

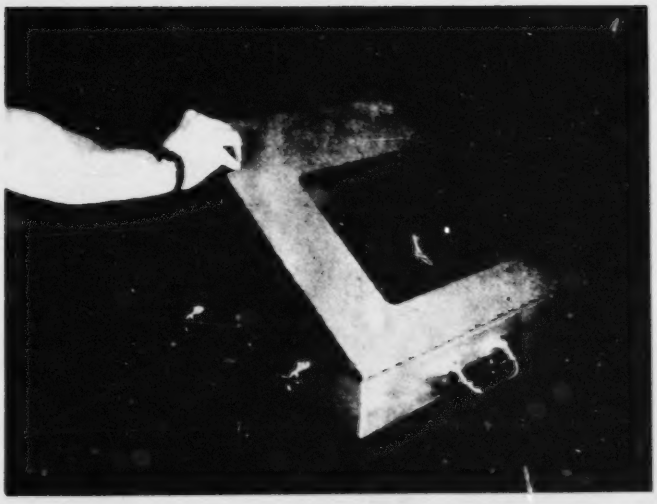
The components selected resulted in a prototype that met the initial requirements of: (a) portability, (b) availability, and (c) modularization. They form a package that is versatile in its present form and readily modified by the addition of supplemental components. It is a prototype designed to indicate only one possible configuration of devices.

SETTING-UP PROCEDURES

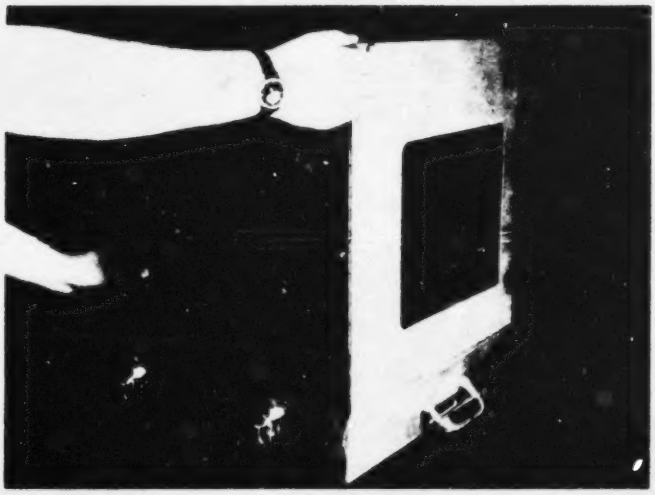


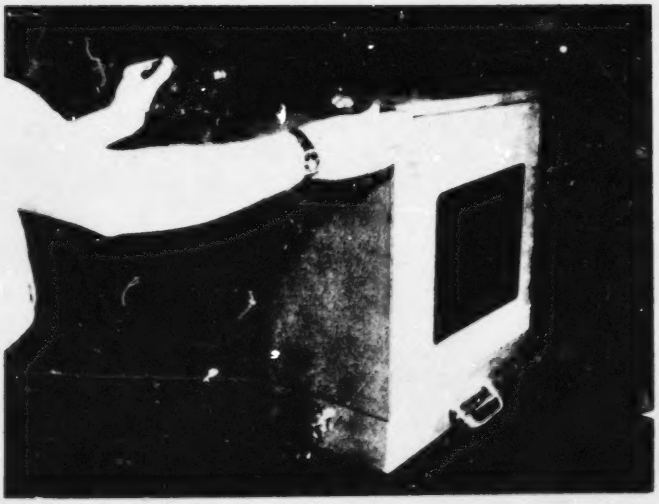
To put the Portable Presentation Package in operation, set it on a desk or table near an electrical wall outlet. Unlatch the lid, lift it off, and set it aside temporarily.

Place it with the handle toward your right. After all parts are in their respective positions, the entire package is rotated to face the student. Fold the screen up.

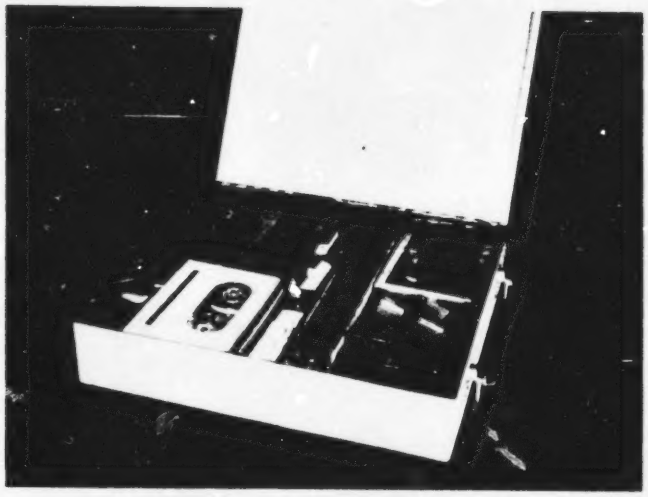


Open the sides and insert bottom rear corners into the clips on the sides of the base. When correctly inserted, the sides will slide down into the clips 1/4 inch providing a light seal.

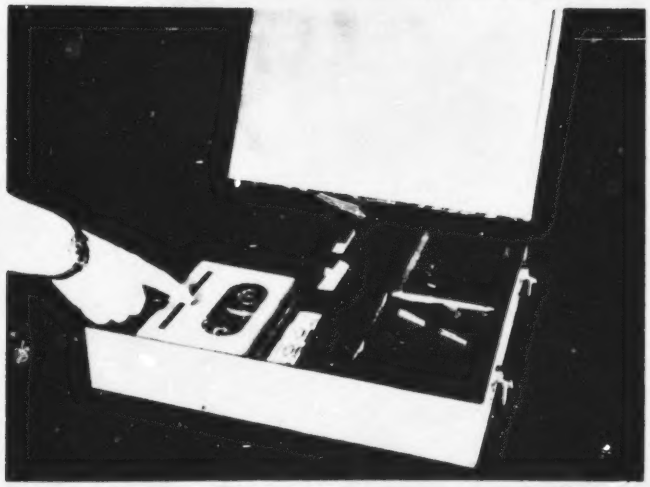




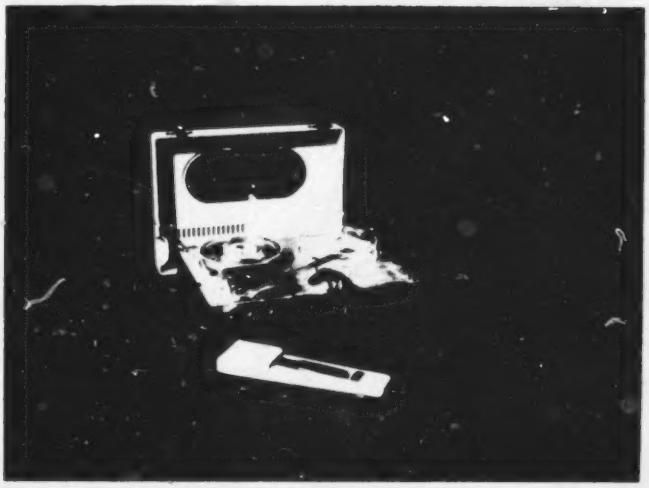
With the front and two sides in place, the lid goes back on providing a relatively darkened enclosure. In rear screen projection, the rear of the screen must be darkened, not the front.



This view shows the fully packed case when the screen is folded up and the sides still protecting the screen.



Packaged in the base compartments are a battery-powered portable tape recorder and microphone. For economy, a recorder without powered capstan was employed. There are several recorders available over a considerable price range that are small enough to fit into the compartment, providing much more latitude for choice than for the other components. As a rule there appears to be a close relationship between quality and price. Surprisingly good audio reproduction can be had at the moderate price levels - ranging up to about $170. The unit shown here is available at less than $40.



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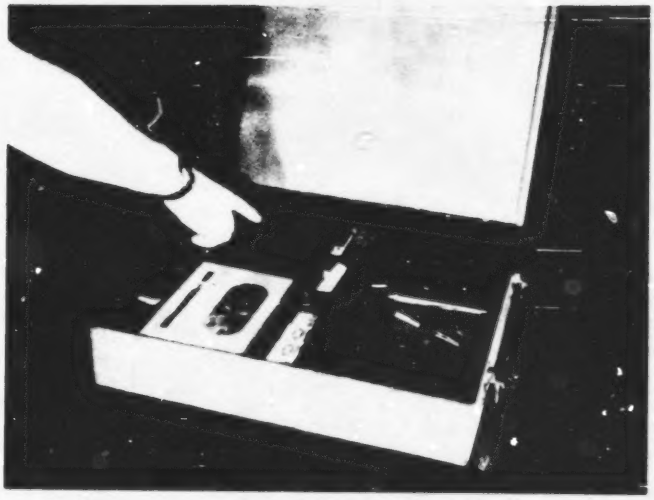
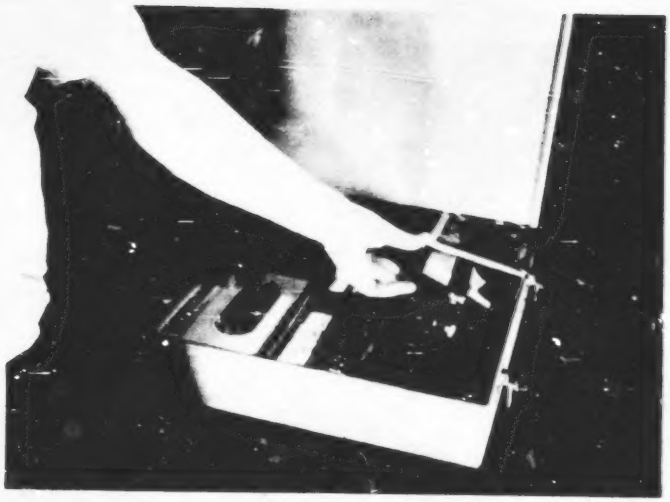
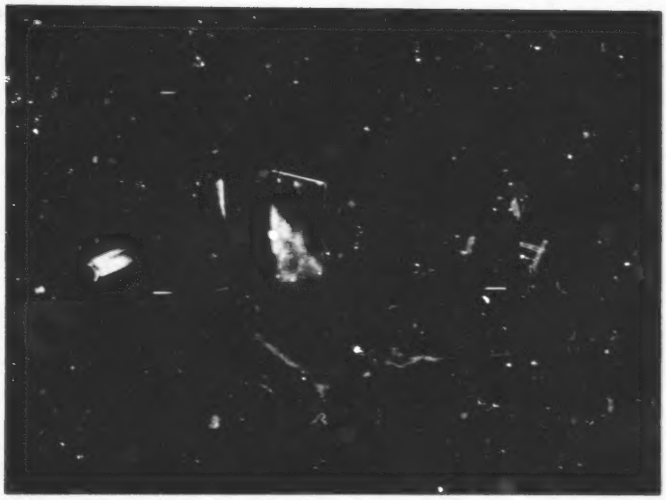
To the rear of the recorder is a very compact film strip projector. This projector may also be used independently for the projection of film stip on a classroom size screen. The lens is readily interchanged to provide for this. A 3-inch lens for classroom projection and a 2-inch lens for use with the Package are included. Other lenses are also available. Price with remote control is $75; each additional lens is $20. The center slots hold the electrical cords, additional recording tapes, film, supplementary lenses, and other accessories. A remote control cord for advancing the filmstrip is also stored here. This cord allows the control of the device from in front or to the side of the screen.

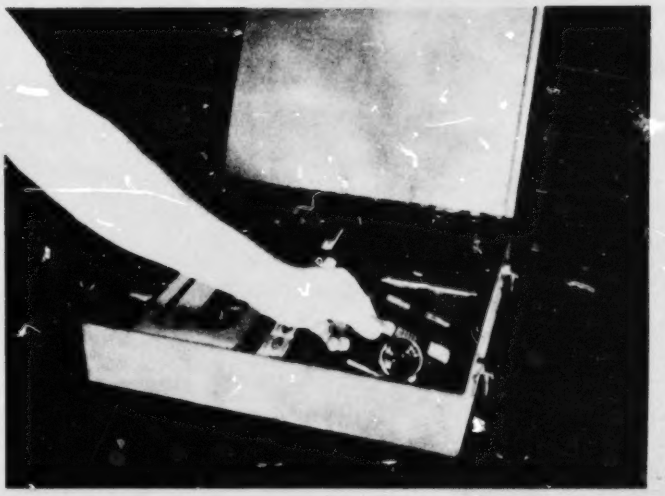






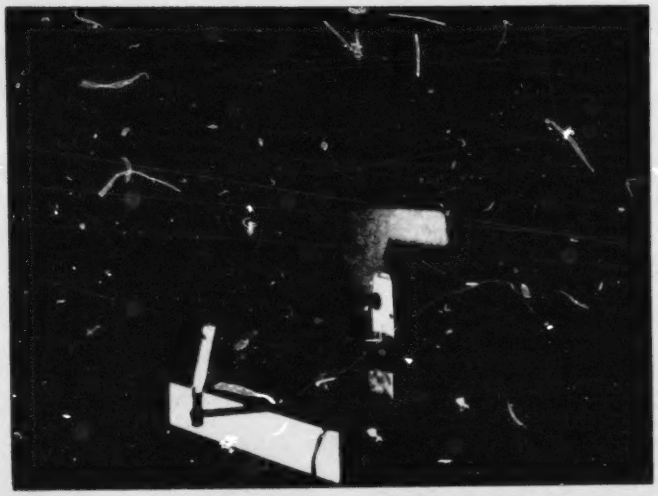
The right rear compartment holds an aluminum stand that the projector sets on, a cloth hood to cover the back when there is an extreme amount of light behind the device, and the mirror and its arm.

The mirror is mounted with a wing nut and bolt. A ball and socket allows adjustment of the mirror' s direction while a threaded vertical arm allows adjustment in height. Three slots in the horizontal arm allow the mirror to be located at varying distances from the screen to accommodate variation in focal length of lenses when supplementary projectors are employed. While these adjustments are included to provide for using different projectors, any specific projector can be used repeatedly with little or no adjustment

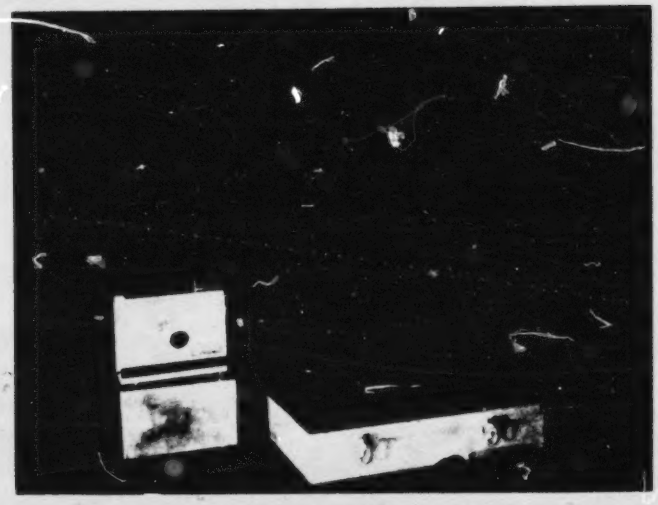


The right front compartment holds a single-frame 35-mm camera with built-in light meter. Single frame cameras produce an image about half the size of a conventional 35-mm slide. They also take 72 pictures on a 36-exposure role of film. When the film is processed, it must be specified that it not be mounted as slides but remain uncut for use as a filmstrip. Editing of filmstrips presents a definite disadvantage. However, for present purposes this is more than offset by compactness of projectors and ease of keeping the presentation in order. Price is under $80.

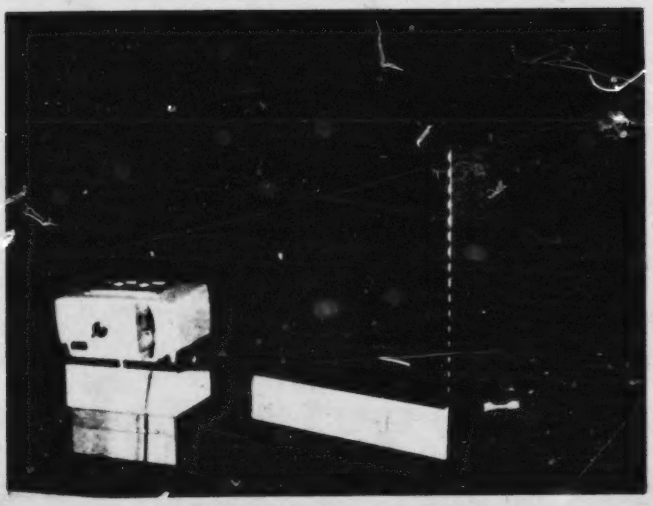
When the four major devices are removed, the bottom looks like this. Additional tapes, film, etc., remain in the center slots.



This illustrates the positioning of the components utilizing a minimum of space. The projector is used from within the case. (The top and side have been removed to show the interior.) The mirror arm and its adjustments may be noted. A 3-inch lens is used.

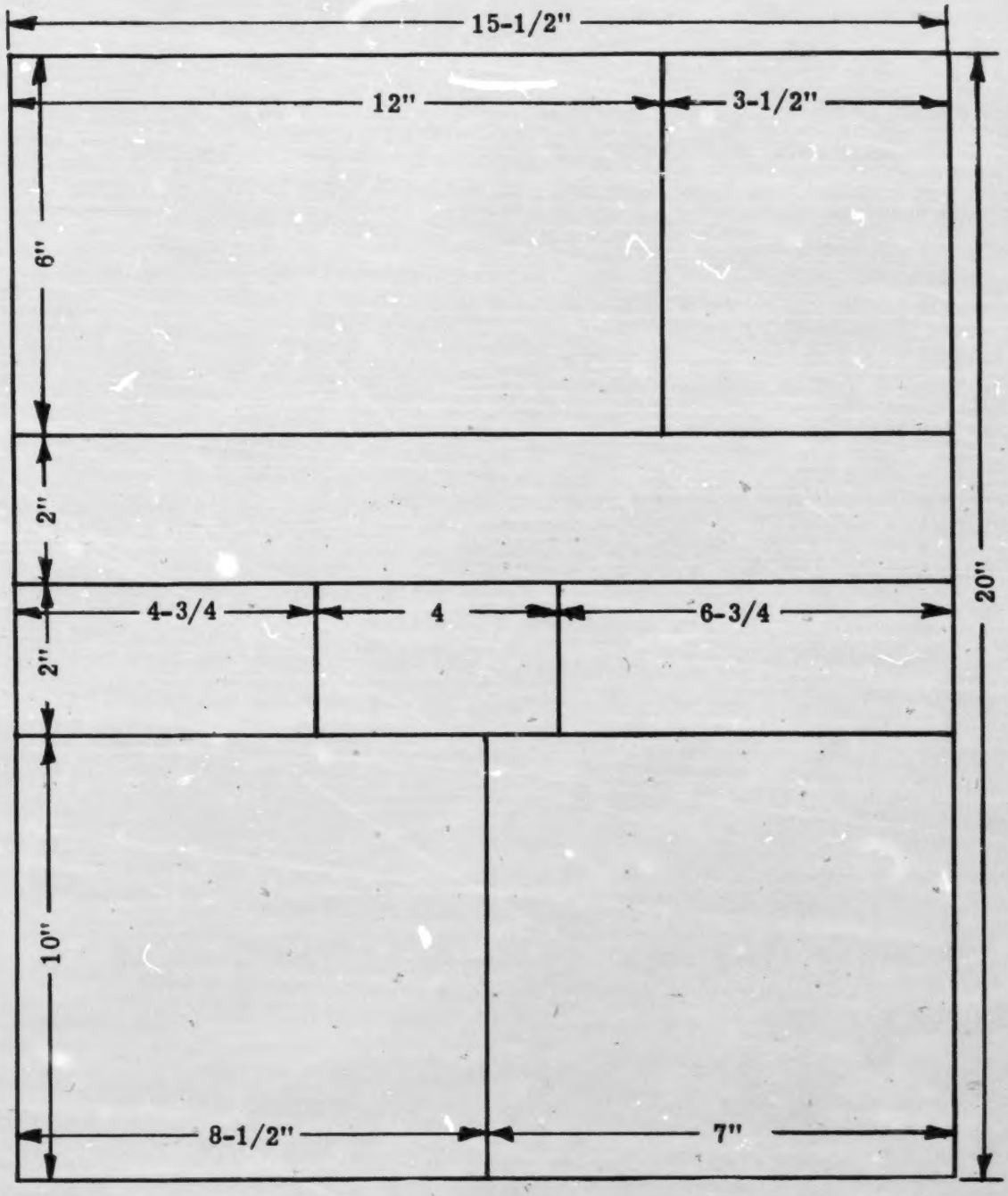


This illustrates the configuration that will probably be the simplest to arrange. A 2-inch lens is being used, though a 3-inch could also be employed if the projector is moved further from the screen. With no mirror and a rear projection screen, the film is placed in the projector backwards.



This illustrates a typical setup when a supplementary 8-mm movie projector is used. With movies, an odd number of mirrors (1, 3, or 5) must be used. Note that both the mirror and the projector are outside. A short (10-mm) focal length lens is required.

Dimensions of the Portable Presentation Package and the internal compartments are shown in the drawing below.



EXAMPLE OF USE

The utilization of the Portable Presentation Package can be illustrated by considering the following situation. Assume that indigenous persons at an overseas base are being supplied with fire extinguishers. While it would be preferable to have an instructor trained in firefighting to conduct the training, this may be impractical for reasons beyond your control. All existing manuals are written in English. While a few of the indigenous personnel speak English, very few can read it. Not all of them are proficient in reading their native language.

Preparation of Instructional Material

Preparation of the instructional material with the Presentation Package would involve the following steps:

1. Analyze the Course Objectives. Each bit of information to be conveyed must be described in objective or behavioral terms.

EXAMPLE.

Objective I. The student must be able to distinguish between classes of fires.

A. Combustible material such as wood, trash, paper.

B. Burning liquids such as gasoline and oil.

C. Electrical fires.

Objective II. The student must be able to select appropriate extinguisher.

A. Water will extinguish class A fires but may do more damage than good on classes B and C.

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This portion of the preparation is written as an aid to the instructor preparing the material and as such is written within his level of comprehension rather than that of the trainee.

2. Prepare Filmstrip. Each step in the training sequence must be represented by a filmstrip image. While a few of these may be reproductions of charts and diagrams, the majority of pictures should be actual color photographs of real objects and activities. These pictures must be within the comprehension level of the trainee rather than that of the instructor.

EXAMPLE.

Picture 1. (First picture following any required titles, etc.) General pictures depicting fire and damage caused by fire.

Picture 2. Shot depicting wood, paper, etc. (see objective I-A).

Picture 3. Shot depicting burning gasoline (see objective I-B).

Picture 4. Shot depicting smoking electrical devices (see objective I-C).

Picture 5. Shot showing precisely the type of extinguisher furnished for class A fires (see objective 2-A).

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Each picture indicated above might be either a single shot or a sequence of related shots. The shots should depict subjects that the trainee will recognize and the actual equipment should be depicted. The mechanics of preparing the filmstrip will vary considerably depending upon the photographic support available in the particular situation.

3. Prepare English Narrative. This should be done while viewing the filmstrip. It may be written or dictated directly into the tape recorder. In either case it should be informal. If dictated, it should be transcribed into a written script for later use during translation and revisions.

In preparing the narrative, it should be kept in mind that it will be translated. Subtle inflections of voice and unusual or colloquial words that may be difficult to translate should be avoided. A nondistracting sound such as a click is used to indicate that the filmstrip is to be advanced.

4. Prepare Indigenous Narrative. If practical, this should be narrated by a person whose speech patterns and dialect are the same as those of the trainee. Since the translator will have both the English narrative and script to work from, considerable latitude in the selection of a translator is possible. This diminishes the dependence on literacy prevalent in writing manuals.

5. Try Out the Material. The resultant training program should be tested. A test that would most probably be adequate without requiring an unreasonable expenditure of time and effort is to observe two or three naive subjects as they go through the training program. Careful notes should be made of all student errors, questions that they ask, prolonged hesitations, and subtle indications of confusion or anxiety. Usually these can be remedied by changing the narration. This is much easier than making revisions in the filmstrip.

When contrasted with slides, the difficulty in editing filmstrip is both a major limitation and a major advantage. It is a limitation while preparing the original, since slides are much easier to edit. However, when it is finished, the filmstrip avoids the possibility that the pictures will get out of order.

The discussion above gives only a rough approximation of the steps involved in preparing a program. Only the first steps of the introductory material are indicated. Subsequent material would lead the trainee through small gradual steps toward the terminal goals. Each training step should be short and explicit so that the trainee can follow without anxiety or error. These steps should include all required instructions on the use of the equipment. The section on "Setting-Up Procedures" in this report might serve as an example if the pictures are imagined as being the filmstrip and the writing the verbal narration. The steps should also include specific provision for actual experience with the equipment, i.e., using the extinguisher to put out a fire. The tape recorder can be stopped to provide adequate time for this practice.

Uses of Instructional Material

The material thus prepared may be presented in several ways. It can be presented to trainees individually by using the projector, screen, and tape recorder contained in the Portable Presentation Package. The same filmstrip and projector can be used with a conventional screen with a live instructor furnishing the narrative. This would allow for the instruction of larger groups. Variations in detail of explanation in the narrative are relatively easy to prepare.

For example, an additional recorded narrative could be directed at persons responsible for supervision and thus contain more detailed explanations than that contained in the original. In a somewhat similar vein, narrations in different languages or different dialects can be prepared allowing for training of multi-lingual populations.

CONCLUSIONS

In conclusion, four points merit emphasis:

1. The Portable Presentation Package is a package of relatively independent devices, not a single device. The components were selected to provide a versatile package that can be utilized in a variety of ways. In some applications not all of the components will be required. In other applications additional components not contained in the Package may be added.

2. The training presented through the Portable Presentation Package should specifically include provisions for the trainee to actually operate the equipment being discussed. The Package was assembled on the assumption that the trainee would be actively engaged rather than passively instructed.

3. The instructional material should be tested and revised until it is reasonable to assume that the trainee can learn from it. It is the responsibility of the instructor preparing the training material to assure that the trainee will benefit from the training to the extent that he can, in fact, successfully perform the tasks.

4. The Package was assembled to facilitate instruction in particular circumstances. It provides a set of instructional tools. As is the case with other tools, its value depends entirely on the ingenuity of the person using it.